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Signed

Stephen Hordley

Dated

29 August 2003

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THE PATENT OFFICE

A

30 JUL 2002



30 JUL 02 E757088-1 C87764
P01/7700 0.00-0217581.8

Request for grant of a patent

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)

The Patent Office

Cardiff Road
Newport
South Wales
NP10 8QQ

1. Your reference

DW 001

2. Patent application number

(The Patent Office will fill in this part)

0217581.8

30 JUL 2002

3. Full name, address and postcode of the or of each applicant (underline all surnames)

MR DAVID WILLIAMS

1 MEADOWSIDE

CROSTON

LEYLAND

LANCASHIRE PR26 9QY

Patents ADP number (if you know it)

If the applicant is a corporate body, give the country/state of its incorporation

8417776002

TA

4. Title of the invention

PIPE COUPLING

5. Name of your agent (if you have one)

"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)

AS ABOVE

Patents ADP number (if you know it)

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number

Country

Priority application number
(if you know it)

Date of filing
(day / month / year)

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing
(day / month / year)

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:

a) any applicant named in part 3 is not an inventor, or

b) there is an inventor who is not named as an applicant, or

c) any named applicant is a corporate body.

See note (d))

No

Patents Form 1/77

9. Enter the number of sheets for any of the following items you are filing with this form. Do not count copies of the same document

Continuation sheets of this form ☐ 0
 Description ☐ 3'
 Claim(s) ☐ 1 ✓
 Abstract ☐ 0
 Drawing(s) ☐ 1 + 1

CF

10. If you are also filing any of the following, state how many against each item.

Priority documents ☐ ✓
 Translations of priority documents ☐ ✓
 Statement of inventorship and right to grant of a patent (Patents Form 7/77) ☐ ✓
 Request for preliminary examination and search (Patents Form 9/77) ☐ 1 ✓
 Request for substantive examination (Patents Form 10/77) ☐ ✓
 Any other documents (please specify) ☐ 1 FEE SHEET (FS2) ✓

11. I/We request the grant of a patent on the basis of this application.

Signature

David Williams

Date 29 July 02

12. Name and daytime telephone number of person to contact in the United Kingdom DAVID WILLIAMS 0790 0302550

Warning

After an application for a patent has been filed, the Comptroller of the Patent Office will consider whether publication or communication of the invention should be prohibited or restricted under Section 22 of the Patents Act 1977. You will be informed if it is necessary to prohibit or restrict your invention in this way. Furthermore, if you live in the United Kingdom, Section 23 of the Patents Act 1977 stops you from applying for a patent abroad without first getting written permission from the Patent Office unless an application has been filed at least 6 weeks beforehand in the United Kingdom for a patent for the same invention and either no direction prohibiting publication or communication has been given, or any such direction has been revoked.

Notes

- If you need help to fill in this form or you have any questions, please contact the Patent Office on 08459 500505.
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PIPE COUPLING

The invention relates to a pipe coupling of the type, which comprises of a bolted pipe joint, such as pipe flanges. The pipe flanges shall incorporate valves of the rising stem type. An interconnecting bridge directly fixed to the periphery of the flanges shall provide independent process pipe media feeds from each of the two flanges. The bridge shall also facilitate the direct fixing of process media monitoring devices.

Current methods of process pipe media monitoring for Differential Pressure Flow Measurement involve: -

- a) Hanging all necessary valves / manifolds and process media monitoring devices from two screwed or welded fittings, which are fixed to the periphery of traditional flanges known as "orifice flanges". These flanges are bolted together about a traditional orifice plate and gaskets from which a differential pressure is created.

Disadvantages of such assemblies include: -

- 1) Excessive weight on the two screwed or welded fittings in the Orifice Flanges. These joints may be subject to failure due to bending moments, vibration and or corrosion.
- 2) Installation costs can be high due to the complex build up of additional support work along with the valve / manifold assemblies.
- 3) Additional weight generated on main process pipe work.

- b) Using tube / pipe (commonly referred to as Impulse Lines) to connect the two screwed or welded fittings to the valve / manifold assemblies which are located some distance away from the orifice flanges and pipe work.

Disadvantages of such assemblies include: -

- 1) Due to the increased number of joints required to build up these assemblies, the risk of process leakage to atmosphere is increased.
- 2) Installation costs can be high due to the labour intensive assembling process required to install the additional tube / pipe work and fittings, along with the valve / manifold and process media monitoring device.
- 3) The accuracy of readings taken from such installations may be reduced due to length of "Impulse lines" and quality of workmanship.

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- c) Cutting into the main process pipe and manufacturing traditional "Flanged Pipe Tee's". From the leg of the pipe tee, flanged valves / manifolds are connected while process media monitoring devices are connected using tube and fittings or further flanged joints.

Disadvantages of such assemblies include: -

- 1) High installation costs due to the fabrication process required to make up the "Flange Tee's" and subsequent interconnecting feeds.
- 2) Additional weight generated on main process pipe work.
- 3) Differential pressure measurements are highly complex and require numerous joints, which could be subject to leakage to atmosphere.

An object of this invention is to provide a pipe coupling assembly which is a safer, more reliable and more cost efficient method of fixing process media monitoring devices to process pipe work.

Accordingly, this invention provides a pipe coupling comprising of two bolted pipe flanges, rising stem type valves, an interconnecting "Bridge", an orifice plate and pipe gaskets or rings. Thus allowing the installation of process media monitoring devices directly on to the process pipe work.

The pipe coupling assembly shall be made of metal along with suitable gasket materials (metal, graphite or compressed fibres) for a traditional pipe flange joint build up. The coupling assembly shall be compliant with any necessary design codes for valves, manifolds, flanges and pipework.

A preferred embodiment of the invention will now be described with reference to the accompanying drawings in which:

Figure 1 shows a side elevation of the whole pipe coupling.

Figure 2 shows an end elevation of the whole pipe coupling.

As shown in Figure 1 the pipe coupling comprises of two bolted pipe flanges (items 1) with an interconnecting "Bridge" (item 2) fixed directly to the periphery of the two flanges. The two flanges can be bolted together about a traditional orifice plate and flange gaskets (item 4). The "Bridge" (item 2) facilitates the direct fixing of process media monitoring devices (item 5). The "Bridge" (item 2) also allows the two independent process media feeds (one per flange) to be directed to the process media monitoring device. The "Bridge" (item 2) allows for opposing lateral movement of the flanges (item 1) when the orifice plate (item 4) requires replacing. The two flanges can be separated without the need to disassemble the complete coupling.

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As shown in Figure 2 rising stem valves (items 3) are also fixed to the periphery of each of the pipe flanges (item 1). These valves can be arranged to provide the process media control functions required. The "Bridge" (item 2) can also facilitate additional rising stem valves if required.

PIPE COUPLING

CLAIMS

- 1.0 A pipe coupling comprising of two, bolted pipe flanges, rising stem type valves, an interconnecting "Bridge", an orifice plate and pipe flange gaskets or rings.
- 2.0 A pipe coupling as Claim 1 where the flow through the pipe flanges is unrestricted, other than those specified in pertaining pipe and or pipe flange specifications.
- 3.0 A pipe coupling as Claims 1&2 incorporating screwed, bolted or welded rising stem type valves.
- 4.0 A pipe coupling as Claims 1,2&3 incorporating rising stem type valves fixed to the periphery of the pipe flanges.
- 5.0 A pipe coupling as Claims 1,2,3&4 where an interconnecting "Bridge" can be fixed across the two pipe flanges directly to the periphery of the pipe flanges.
- 6.0 A pipe coupling as Claims 1,2,3,4&5 where the interconnecting "Bridge" can be fixed to provide an external process media flow path between the two pipe flanges.
- 7.0 A pipe coupling as Claims 1,2,3,4,5 & 6 where the interconnecting "Bridge" can facilitate the fixing on to of rising stem type valves.
- 8.0 A pipe coupling as Claims 1,2,3,4,5,6&7 where the interconnecting "Bridge" allows the direct mounting of process media monitoring devices.
- 9.0 A pipe coupling as claimed in any proceeding claim, which is made from metal.
- 10.0 A pipe coupling substantially as herein described above and illustrated in the accompanying drawings.

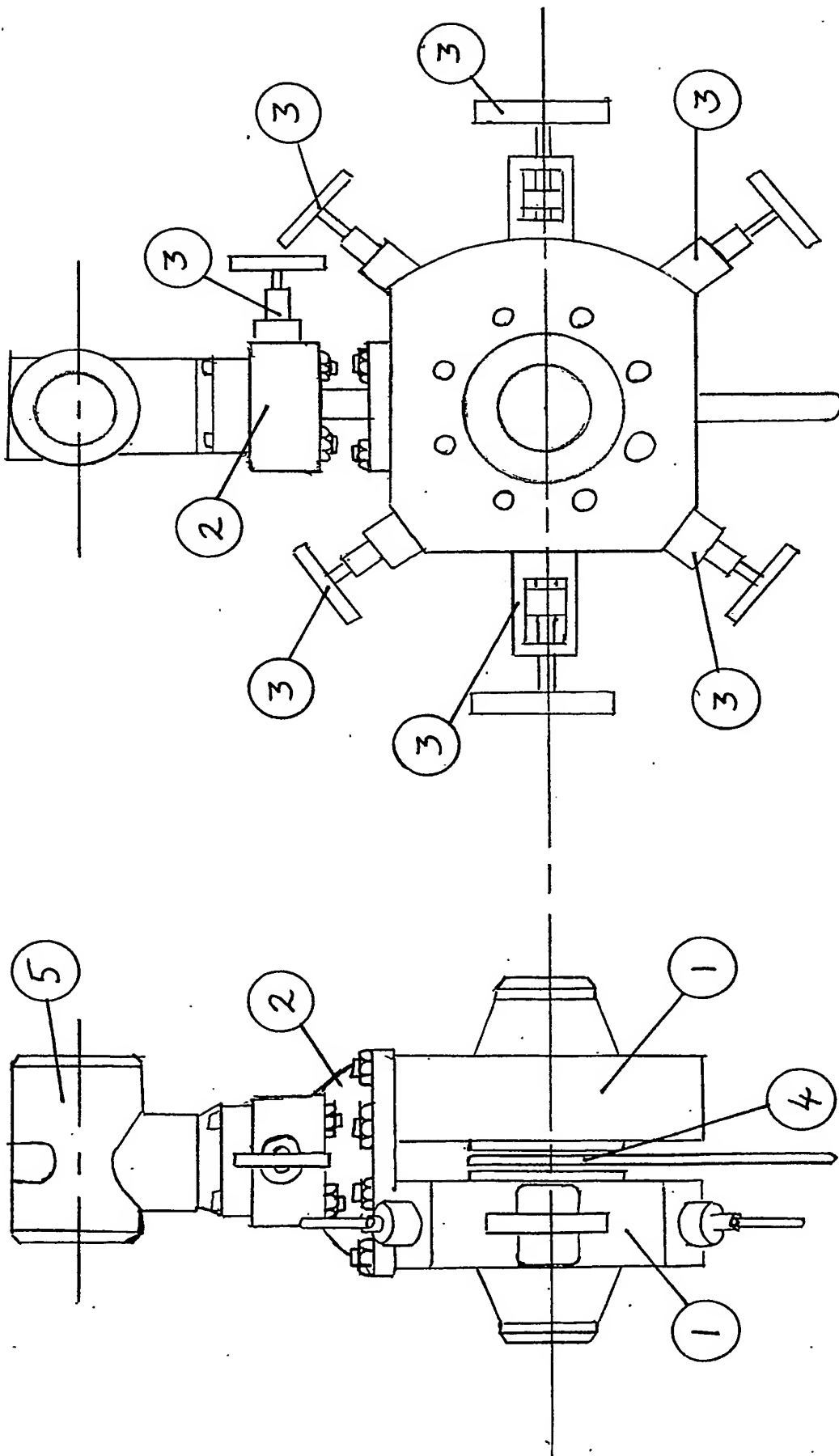


FIGURE 1

FIGURE 2

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